

the association between resting spores and plasmodium on the basis of similarity of contents. The plasmodium may well be a secondary parasite. The existence of an antheridial-oogonial sexual apparatus in *Urophlyctis* is definitely disproved, but WILSON's description of fusion between unlike zoospores must await confirmation.—FREEMAN WEISS.

Taxonomic notes.—HOCHREUTNER¹³, in studying the Andean genus *Cristaria* (Malvaceae), has established two new subgenera (*Septaria* and *Aseptaria*), each including two new sections, besides describing several new species. In *Bakeridesia* also two new subgenera (*Monopteron* and *Dipteron*) are described, and one (*Pseudabutulastrum*) in *Malvastrum*.

DUNN¹⁴ has described a new genus of Dipterocarpaceae (*Dioticarpus*) from Southern India. It is a valuable timber tree closely related to *Balanocarpus*.

WILDEMAN¹⁵ has discussed various representatives of the African flora. *Clerodendron* (Verbenaceae) is represented by 31 species, 8 of which are described as new. *Acioa* (an African genus of Rosaceae) is credited with 37 species, 15 of which are new. A number of genera of Leguminosae are presented, including 23 new species distributed among 10 genera.

MOORE¹⁶ has published the result of a study of the Australian collections at the British Museum, describing 89 new species in various families, and also a new genus (*Leptospermopsis*) of Myrtaceae.

DOP¹⁷ has published 13 new species of *Clerodendron* (Verbenaceae) from Indo-China.

GAGNEPAIN¹⁸ has published four new genera of Compositae from the Orient, as follows: *Camchaya*, *Iodocephalus*, and *Thorelia*, all belonging to Vernoniaceae, and *Colobogyne*, belonging to Coreopsidae.—J. M. C.

Welwitschia mirabilis.—When the third edition of *Morphology of Gymnosperms* by COULTER and CHAMBERLAIN was published in 1917, an important investigation of the floral structures of *Welwitschia* was overlooked. CHURCH¹⁹

¹³ HOCHREUTNER, B. P. G., Notes sur les genres *Cristaria*, *Bakeridesia*, *Malvastrum*. Ann. Conserv. Jard. Bot. Geneve 21:405-428. 1920.

¹⁴ Decades Kewenses: C.-CI. Kew Bull. 1920: no. 10. 1920.

¹⁵ WILDEMAN, É. DE, Notes sur quelques espèces Africaines du genre *Clerodendron*. Bull. Jard. Bot. Bruxelles 7:161-270. 1920.

¹⁶ MOORE, S. LEM., A contribution to the flora of Australia. Jour. Linn. Soc. 45:159-220. pls. 11, 12. 1920.

¹⁷ DOP, PAUL, *Clerodendron* nouveaux de l'Indochine de l'herbier du muséum. Notulae Syst. Herb. Mus. Paris 4:7-14. 1920.

¹⁸ GAGNEPAIN, F., Quatre genres nouveaux de Composees. Notulae Syst. Herb. Mus. Paris 4:14-19. 1920.

¹⁹ CHURCH, A. H., On the floral mechanism of *Welwitschia mirabilis* Hooker. Phil. Trans. Roy. Soc. London 205:115-151. pls. 9-13. 1914.

secured a very complete series of stages in the organogeny of both staminate and ovulate flowers from material furnished by PEARSON. The illustrations are so carefully drawn and the stages so close together, that one can study the problem for himself, from the first divergence in the topography of the staminate and ovulate flowers, up to the condition at the time of pollination. The facts of development are made still more valuable by detailed descriptions which prevent any misinterpretation of the figures.

When it comes to conclusions, however, each one will probably have his own theories in regard to the plant which so thoroughly deserves its specific name. That the ancestral flowers were functionally bisporangiate, all students of comparative morphology must agree. The evidence in favor of insect pollination is also rather complete. CHURCH does not believe that the evidence supports the contention that the "perianth" consists of decussate bracts. He believes that the reductions which have brought about a dioecious condition from an originally bisporangiate flower are of the same type as those known in *Cycadeoidea* and *Williamsomia*, but that no relationship is involved in the similarity. He also fails to see any relationship to the flowers of Angiosperms, the resemblances being merely a "parallel progression of physiological mechanism devoted to seed production."—C. J. CHAMBERLAIN.

Myrmecophilous plants.—CHODAT and CARISSO²⁰ have found that in certain plants the relationship of the symbiotic ants is a secondary matter, the excrescences which they inhabit being really galls caused by hymenopterous larvae. All stages in the gall formation, from the deposition of the egg to the escape of the larva leaving a hole for the entry of the ants, were found in several South American species of *Cordia* (Boraginaceae) and in *Acacia Cavenia*. It is also pointed out that the symbiosis could not be regarded, as heretofore, as a protection against leaf-cutting ants, since the inhabitants of the galls on *Cordia* are themselves leaf-cutters, and their "ant gardens" within the galls are composed of bits of leaves and flowers which they have cut off and brought in.—GEO. D. FULLER.

Umbelliferous cushion plants.—Two closely related umbelliferous genera, *Azorella* and *Bolax*, are notable for their compact cushion habit. They occur in the high Andes, in Patagonia, and in the subantarctic portions of South America. HAUMAN²¹ has reviewed the 24 species occurring in Argentina, giving ecological and taxonomic notes and describing one new species, *A. yareta*. The vegetation of the celebrated "balsam bogs" of Tierra del Fuego has *Bolax gummifera* as its characteristic species. A key has been constructed for the determination of the species and a very complete bibliography given.—GEO. D. FULLER.

²⁰ CHODAT, R., and CARISSO, LUIS, Une nouvelle théorie de la myrmécophilie Compt. Rend. Soc. Phys. et Hist. Nat. Genève. 37:9-12. 1920.

²¹ HAUMAN, LUCIEN, Notes sur les espèces Argentine des genres *Azorella* et *Bolax*, Rev. Soc. Arg. Ciens. Nat. 4:468-500. figs. 7. 1919.